

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 5-9, 11, 12, 14-18, 20, and 21 are currently pending. Claims 4, 10, 13, 19, and 22 have been cancelled without prejudice or disclaimer; and Claims 1, 5, 6, 11, 12, 14, 15, 20, and 21 have been amended by the present amendment. The changes to the claims are supported by the originally filed specification and do not add new matter.

The amended claims are supported by the originally filed specification at least at page 10, line 9 to page 11, line 28.

In the outstanding Office Action, Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by JP Patent Application Publication No. 11-236813 to Ono et al. (hereinafter “the ‘813 application”); Claims 1 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,853,459 to Kuwamoto et al. (hereinafter “the ‘459 patent”) in view of the ‘813 application; Claims 1, 4, 7-13, and 16-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,701,735 to Kawaguchi (hereinafter “the ‘735 patent”) in view of the ‘813 application; Claims 5 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘735 patent in view of the ‘813 application and U.S. Patent No. 5,732,554 to Sasaki et al. (hereinafter “the ‘554 patent”); and Claims 6 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘735 patent in view of the ‘813 application and the ‘459 patent.

Amended Claim 1 is directed to an exhaust gas purification apparatus comprising: (1) a casing; (2) a honeycomb-like filter accommodated in the casing and comprising a porous silicon carbide sinter carrying an exhaust gas purification catalyst, the honeycomb-like filter being configured to remove particulates in an exhaust gas; (3) a regeneration device configured to cause the honeycomb-like filter to be preheated with heat of the exhaust gas

before regenerating the honeycomb-like filter; and (4) a switch valve positioned downstream to the casing and configured to switch a flow of the exhaust gas, (5) wherein the regeneration device comprises a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas.

Regarding the rejection of Claim 1 under 35 U.S.C § 102(b), the '813 application is directed to a regeneration system for an exhaust gas purifying device. However, it is respectfully submitted that the '813 application fails to disclose a regeneration device comprising a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas, as recited in Claim 1. Rather, the '813 application discloses a regeneration system that regenerates a honey comb filter 22 in an exhaust gas purification apparatus 20, when a predetermined time elapses during the running of the diesel engine 10.¹

Accordingly, it is respectfully submitted that Claim 1 (and all associated dependent claims) patentably defines over the '813 application.

Regarding the rejection of Claim 1 under 35 U.S.C. § 103(a) as being unpatentable over the '459 patent in view of the '813 application, the '459 patent is directed to an exhaust gas purifying method, exhaust gas filter, and exhaust gas filter purifying apparatus using the same. However, it is respectfully submitted that the '459 patent fails to disclose a

¹ See '813 application, paragraph [0027].

regeneration device comprising a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas, as recited in Claim 1. Rather, the
‘459 patent discloses controlling operations of heating means 17a/17b in response to the average temperature or the temperature increasing rate of an exhaust gas filter 15a/15b detected by the temperature detecting means 16a/16b.² Further, the ‘459 patent discloses that a device controller operates an electric heater and an air blower, and that air flowing from the air blower is heated by the electric heater into a high-temperature blast. The ‘459 patent discloses that the hot blast heats the exhaust gas filter 15a to cause ignition and combustion of the particulates collected by the exhaust gas filter 15a.³ The ‘459 patent does not disclose a regeneration device comprising a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas.

Further, as discussed above, the ‘813 application also fails to disclose the regeneration device recited in Claim 1. Thus, no matter how the teachings of the ‘459 patent and the ‘813 application are combined, the combination does not teach or suggest that the regeneration device comprises a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the

² See ‘459 patent, column 8, lines 39-43.

³ Id. at column 9, lines 10-26; and column 11, lines 29-40.

temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas.

Accordingly, it is respectfully submitted that Claim 1 (and all associated dependent claims) patentably defines over any proper combination of the '459 patent and the '813 application.

Regarding the rejection of Claim 1 under 35 U.S.C. § 103(a) as being unpatentable over the '735 patent in view of the '813 application, the '735 patent is directed to a method for regenerating a particulate collection filter and an exhaust emission control system with a particulate collection filter. However, it is respectfully submitted that the '735 patent fails to disclose that the regeneration device comprises a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas. Rather, the '735 patent discloses controlling the activation of a catalyst by measuring the temperature of a filter 2.⁴ In particular, the '735 patent discloses determining whether or not the temperature of an upstream part of the filter 2 is lower than a temperature T2, which is set lower than the activation temperature of the catalyst, and whether or not the temperature of the downstream part of the filter is higher than a temperature T3, which is higher than the activation temperature of the catalyst and would surely cause fuel ignition if fuel was supplied. Once these conditions are met, the '735 patent discloses that a fuel supply unit 8 is driven to mix fuel with secondary air supplied to the filter 2 and, as a result, the temperature of the particulates in the downstream part of the filter 2 is increased to an ignition temperature

⁴ See '735 patent, column 4, line 46 to column 5, line 40.

thereof, and the particulates start to burn.⁵ The '735 patent does not disclose a regeneration device comprising a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas.

Further, as discussed above, the '813 application also fails to disclose the regeneration device recited in Claim 1. Thus, no matter how the teachings of the '735 patent and the '813 application are combined, the combination does not teach or suggest that the regeneration device comprises a first temperature detector configured to detect a temperature in the casing, a second temperature detector configured to detect a temperature of the exhaust gas, and a processor configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the honeycomb-like filter with the exhaust gas.

Accordingly, it is respectfully submitted that Claim 1 (and all associated dependent claims) patentably defines over any proper combination of the '735 patent and the '813 application.

Regarding the rejection of dependent Claims 5 and 14 under 35 U.S.C. § 103(a), it is respectfully submitted that the '554 patent fails to remedy the deficiencies of the '735 patent and the '813 application, as discussed above. Accordingly, it is respectfully submitted that dependent Claims 5 and 14 patentably define over any proper combination of the '735 patent, the '813 application, and the '554 patent.

Regarding the rejection of dependent Claims 6 and 15 under 35 U.S.C. § 103(a), it is respectfully submitted that the '459 patent fails to remedy the deficiencies of the '735 patent

⁵ See '735 patent, column 5, lines 4-37.

and the '813 application, as discussed above. Accordingly, it is respectfully submitted that dependent Claims 6 and 15 patentably define over any proper combination of the '735 patent, the '813 application, and the '459 patent.

Amended Claim 12 recites limitations analogous to the limitations recited in Claim 1. Moreover, Claim 12 has been amended in a manner analogous to the amendments to Claim 1. Accordingly, for reasons analogous to the reasons stated above for the patentability of Claim 1, it is respectfully submitted that Claim 12 (and all associated dependent claims) patentably defines over any proper combination of the '735 patent and the '813 application.

Amended Claim 21, recites in part, regenerating means for regenerating the filter by heating the filter, wherein the regenerating means preheats the filter with heat of the exhaust gas before regenerating the filter, and the regenerating means includes heating means for heating the filter to remove the particulates deposited in the filter, switching means for switching a flow of the exhaust gas, first temperature detecting means for detecting a temperature in the casing, second temperature detecting means for detecting a temperature of the exhaust gas, and processing means for making a comparison of the temperature in the casing and the temperature of the exhaust gas, operating the switching means based on the comparison and preheating the filter with the exhaust gas.

As noted above, the '735 patent and the '813 application fail to disclose the regeneration device recited in Claim 1. Thus, the '735 patent and the '813 application fail to disclose the regenerating means of Claim 21. Accordingly, it is respectfully submitted that Claim 21 patentably defines over any proper combination of the '735 patent and the '813 application.

Thus, it is respectfully submitted that independent Claims 1, 12, and 21 (and all associated dependent claims) patentably define over any proper combination of the '813 application, the '459 patent, the '735 patent, and the '554 patent.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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